REMARKS

During the course of reviewing the case, some minor mistakes were identified in Paragraphs 20, 42 and 42 of the specification and in the abstract. Therefore, these paragraphs were amended to correct the errors. No new matter is involved, as the errors are clearly typographical in nature.

The Examiner objected to the drawings because he found that they did not show every feature recited in the claims. In particular, the "rotating element" of Claims 15, 17 and 27 was not illustrated. The applicants deleted that language from the claims. Therefore, corrected drawings are not believed to be necessary to meet the drawing requirements.

However, in reviewing the case it was found that symbols N and S were imprecisely used in Fig. 2 to refer to the noise and signal outputs from the wavelength beam splitter 24. The symbols should have been N_i and S_i instead, as clearly understood from the description in Paragraph 28 of the specification. Therefore, a Replacement Sheet for Fig. 2 is being submitted to correct the defect. A marked-up copy is also enclosed for the Examiner's review. Since the

corrected labels clearly track the description in the specification, no new matter is involved.

The Examiner rejected Claims 15, 17 and 27 under 35 USC 112, first paragraph, for lack of enabling disclosure with reference to the "rotating element" of the tunable filter. This language has been removed from the claim language; therefore, the issue has become moot. With regard to the rest of the language recited in these claims, namely "wherein said tunable filter produces a retro-reflected beam, and said beam is utilized as a measure of an initial angle of incidence of an input beam for an initial calibration of an angle of rotation of the tunable filter," it is noted that Figs. 14-16 show these limitations and Paragraphs 39-43 (amended number) describe them in detail. The claimed retro-reflected beam, angle of incidence of the input beam, and angle of rotation of the tunable filter are clearly described in the text and shown in the figures. Therefore, this rejection is believed to have been overcome by the amendment to the claims.

The Examiner rejected Claims 17 and 27 under 35 USC 102(a) as anticipated by Kuo et al. (U.S. Patent No. 6,369,923). This patent deals with a system for stabilizing the

wavelength in a DWDM (Dense Wavelength Division Multiplexing) operation using a single reference comb filter. As illustrated in Fig. 8 and described particularly in Column 8 of the specification, Kuo et al. use a tunable filter 54 to isolate a channel of interest, a beam splitter 33 to produce two beams of that channel, and a comb filter 50 to process one of the beams. Then, they compare the output of the filter 50 to the unfiltered beam from the splitter 33 to determine the location of the operating wavelength with respect to the desired ITU channel wavelength.

The Kuo patent does not describe the use of an encoder, nor of a wavelength beam splitter. Moreover, the patent does not deal in any way with calculating a signal-to-noise ratio; or calculating a wavelength error based on information provided by an encoder about the angle of rotation of a tunable filter. No use of the reflected beam from the tunable filter 54 is described. The beam splitter 33 is simply utilized to split the transmitted beam into two parts 48 and 49; as such, it is different from the wavelength beam splitter shown Figure 3 of the present application. Moreover, although the Kuo patent shows comb filter 50, the reflection from the comb filter is never

utilized. In contrast, the reflected beam from the wavelength beam splitter is a critical part, i.e., the signal, in the monitoring device of the present invention.

It is well settled law that anticipation can only be found when all elements of a claim are found in a single reference. As amended, Claim 17 recites, in part,

"... a tunable filter ... , wherein said tunable filter produces a retro-reflected beam, and said beam is utilized as a measure of an initial angle of incidence of an input beam for an initial calibration of an angle of rotation of the tunable filter; and

an encoder to measure said angle of rotation of the tunable filter."

Similarly, amended Claim 27 recites, in part, the steps of producing a

" retro-reflected beam;

utilizing said beam as a measure of an initial angle of incidence of an input beam for an initial calibration of an angle of rotation of the tunable filter;

using an encoder to measure said angle of rotation of the tunable filter; ... ."

The Kuo patent describes the use of a tunable filter, but it does not disclose either an encoder or a retro-reflected beam that measure the initial angle of incidence of the input beam for an initial calibration of the tunable filter (or for any other purpose). Therefore, inasmuch as these two elements of the claims are missing in the teachings of the patent, it cannot be said to anticipate either Claim 17 or Claim 27.

The Examiner rejected Claims 1, 3, 5, and 18-20 under 35 USC 103(a) as obvious over Kuo et al ('923). The Examiner also indicated that Claims 2, 4, 6, 7-14, 16 and 21-25 would be allowable if rewritten in independent form to include all limitations of the base and intervening claims. Accordingly, the applicants have amended Claims 2, 7 and 11 to independent form. Claim 1 has been cancelled, without prejudice. Claims 3 and 5 have been amended to depend from Claim 7 and Claim 16 has been amended to correct its dependence. Therefore, Claims 2-14, as amended, are believed to be in allowable form.

With respect to Claim 18, the applicants respectfully traverse the Examiner's rejection. When dealing with an obviousness rejection, it is well settled that to establish

a *prima facie* case of obviousness there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Without a motivation to combine, the skill of the artisan, by itself, cannot be relied upon in hindsight to provide the suggestion to combine references. That is, the teaching or suggestion to make the claimed combination must be found in the prior art, not in the applicant's disclosure. The mere fact that references can be modified does not render the resultant modification obvious unless the prior art also suggests the desirability of the modification. Furthermore, the prior art references must teach or suggest all the claim limitations. (MPEP §§ 2132,2143)

Claim 18 recites the combination of, in part,

" a wavelength beam splitter characterized by a periodic spectral response with a period substantially equal to the channel spacing of the multi-channel communication system;...

detector means for sensing and measuring a signal beam and a noise beam produced by the wavelength beam splitter; ... ."

The beam splitter 33 described by Kuo et al. is clearly a colorless splitter, otherwise it would not produce two beams of equal spectral band, as required for the operation of the invention. Therefore, the wavelength beam splitter limitation of the claim is not met. The combination of the splitter 33 with the comb filter 50 still produces a single-channel spectrum (due to the selection of the tunable filter), but not the periodic spectral response of a wavelength beam splitter. Therefore, this limitation is also not met. Finally, the patent does not describe a detector for sensing and measuring signal and noise. Thus, it is respectfully submitted that nothing in the Kuo disclosure would suggest using a wavelength beam splitter to produce and measure noise in a multi-channel system and calculate wavelength errors as described and claimed by the applicants. The Kuo patent deals with a different problem in the art. Therefore, there would be no reason for one skilled in the art to be motivated to modify the Kuo teachings to arrive at the present invention. Although the Kuo patent teaches the use of a comb filter 50, the reflection from the comb filter is not utilized, in contrast to the reflected beam from the wavelength beam splitter of the applicants' disclosure, which is a critical part, i.e., the signal, in their invention.

In addition to the lack of suggestion or motivation, it is important to note that the teachings of this reference, even when combined with the general knowledge of the artisan in the field, would not produce the claimed invention without a total redesign and adaptation of the components of interest to conform to the applicants' disclosure. As mentioned, a colorless beam splitter is not the same as a wavelength beam splitter. Thus, to achieve the result of the present invention, one skilled in the art would have to provide the additional knowledge required to appropriately modify the teachings of the references. However, the existence of that knowledge is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine or modify the teachings of the references (MPEP § 2143.01), and no such reason is provided by the reference or otherwise in this case.

Moreover, while the ordinary skill of the artisan coupled with objective reasons to combine may be invoked to support a finding of obviousness in the combination of prior art, it may not be invoked to supply elements of the invention that are missing in the combination. As discussed, three elements of Claim 18 are missing in the Kuo disclosure.

The same argument applies to method Claims 19 and 26. Claim 19 recites the different limitation of "calculating a signal-to-noise ratio," which is also missing in Kuo. Thus, the applicants respectfully submit that this patent does not suggest its modification to arrive at the present invention; no objective reason to modify its teachings exists because Kuo deals with a separate problem; and in any event it could not be modified, without the addition of absent components, to produce the claimed invention. Therefore, the basic requirements for a *prima facie* case of obviousness of independent Claims 18, 19 and 26 are not believed to be present.

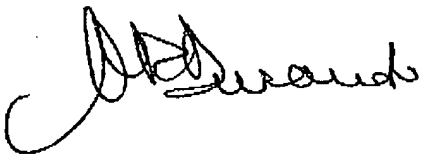
The same argument is offered with reference to dependent Claims 20, 23 and 24, with the further points of distinction provided by the particular limitations added by each claim. Claim 25 has been cancelled because duplicative of Claim 24.

In view of the Examiner's indication of allowability of Claim 21, this claim has been rewritten in independent form. Therefore, Claims 21 and 22 should also be in allowable form.

In view of the foregoing, the applicants believe that their invention represents an advance in the art that is characterized by novel and non-obvious features that are worthy of patent protection. Accordingly, reconsideration of the rejection of the pending claims, as amended, is respectfully requested.

The applicants and their attorney thank the Examiner for his thorough examination. A credit-card payment form is attached to cover the fee for 3 additional independent claims (now 9, originally 6). Should any other payment be required, please charge it to our Deposit Account No. 04-1935.

Respectfully submitted,



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ANNOTATED MARKED-UP DRAWING

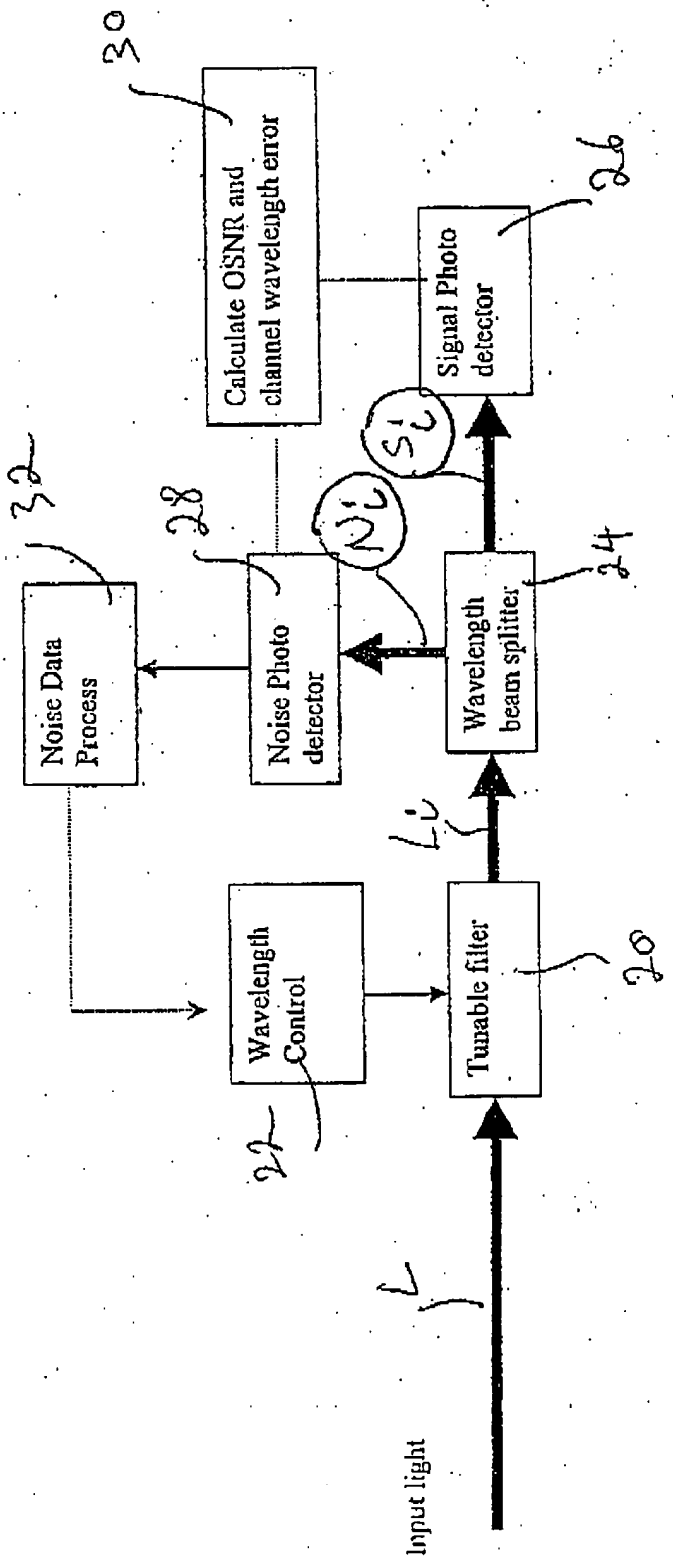

Figure 2. Schematical diagram of Optoplex OPM